Leq Measurements Limited

SOUND MEASURING INSTRUMENTATION

TELEPHONE
416-791-3440
TELEX NO: 06 23471
TELEX TOR CODE 6010

175 ADVANCE BLVD.
UNIT 12
BRAMPTON, ONTARIO
L6T 4J1

REQ. NO. 3-9207

CONTRACT REPORT NO. OET 83-01021

JOB CATEGORY SOFTWARE PROGRAM

A program designed to sort data files on individuals by job category from data previously collected and stored on data discs. The printout from a Microcomputer will be both numerical and graphical.

17 pp

MICROMEDIA

JUL 30 1985

DESCRIPTION OF PROGRAM

The program requires that the program disc be loaded into an Apple II computer and when the system is booted, the program CATSCANER is automatically loaded.

CATSCANER is a program unique to Apple which automatically 'SCANS' the CATALOGUE' for designated files.

The program then requests that the disc containing the data records be loaded into drive # 2 and a file is created of the directory listings.

Next the user is requested to indicate if there is more than one data disc. If YES the program then tells the user to put in successive data discs. If NO the program asks for the job code.

Once the job code is entered the computer sorts the directory and extracts the files by the job code entered and stores these individual job code files.

When this is complete the "THQ" program is automatically loaded.

THQ program loads the job code file names from drive # 2 and creates a MASTERFILE and then loads the "RECALL" program.

The RECALL program loads the MASTERFILE and prints the 3 dB distribution for the individual files always asking the question "are there more on Masterfile?"

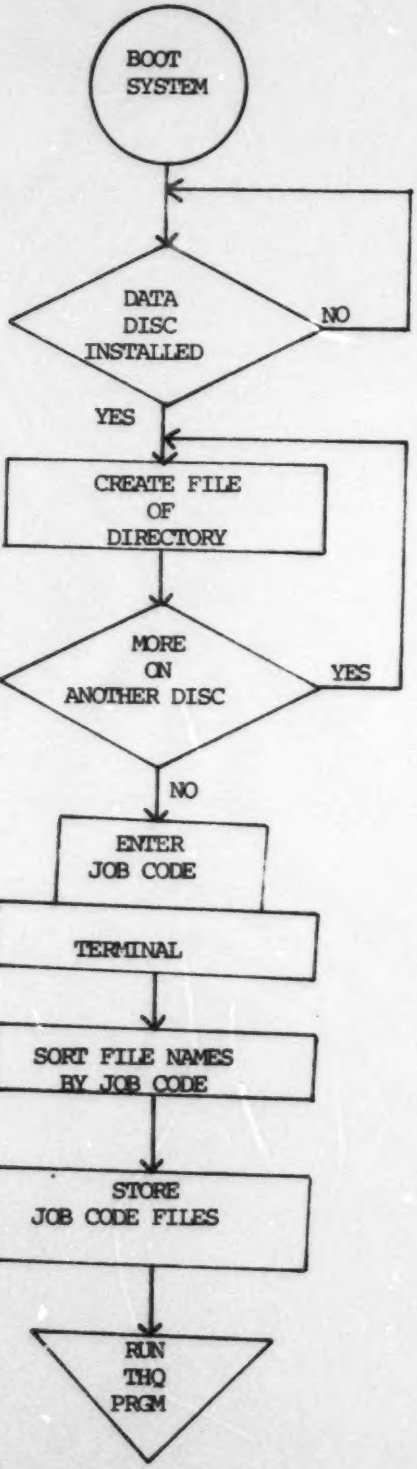
When it receives a NO it starts to calculate the averages by job code and then calculates the standard deviation.

On completion of thisit prints the averages and standard deviation in numerical form

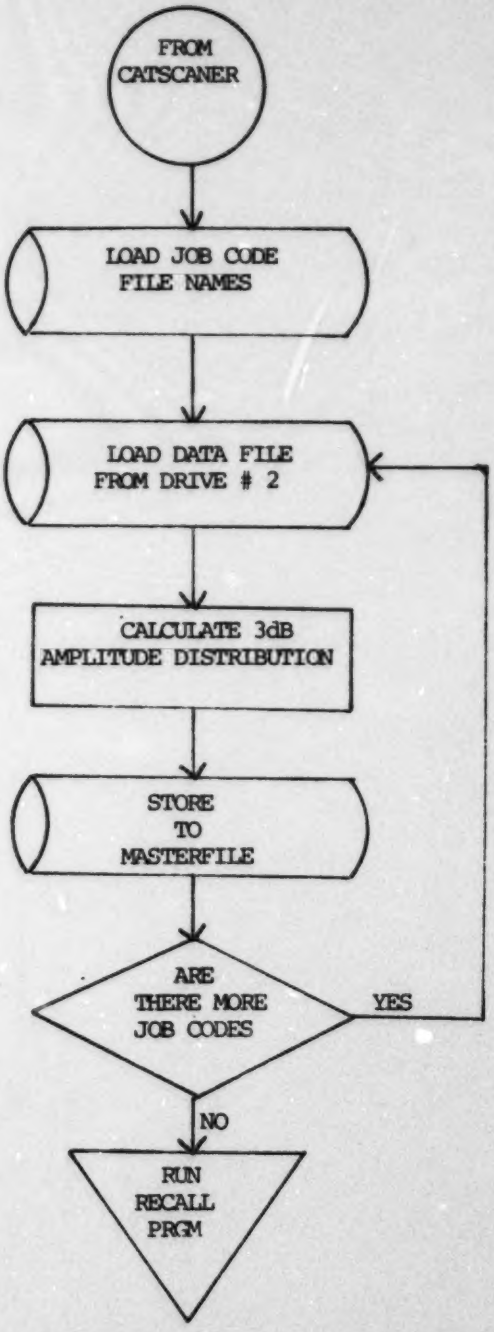
The next step is for the computer to generate a graph and prints in graphical form in 3 dB steps the averages for the job category.

END

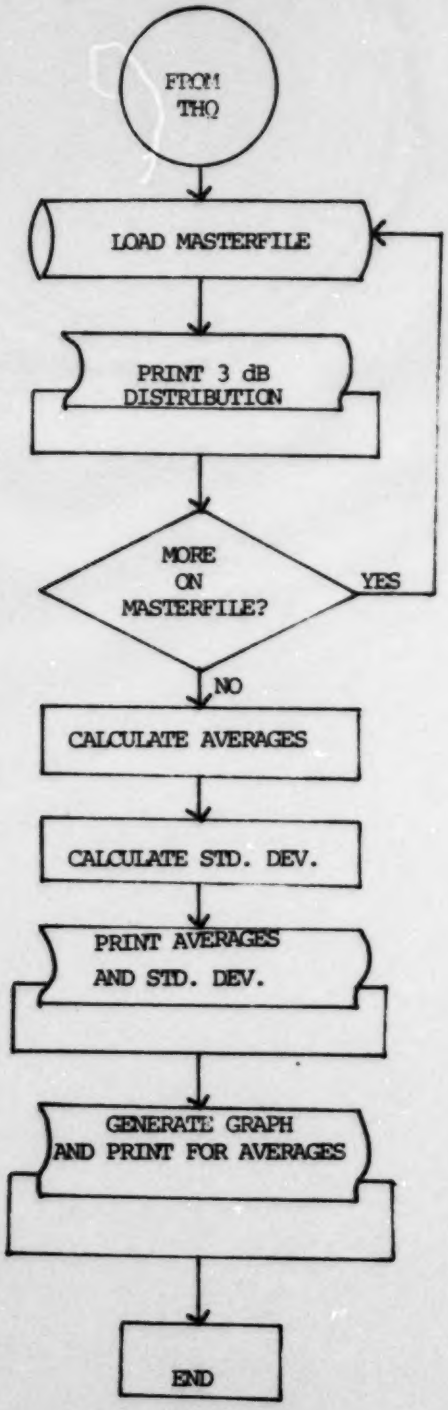
Note: There is no program such as CATSCANER for Commodore or TRS computers where the files are searched and automatically loaded. For Commodore and TRS the file names by job category will have to be loaded from the keyboard.



CATSCANER FLOW CHART



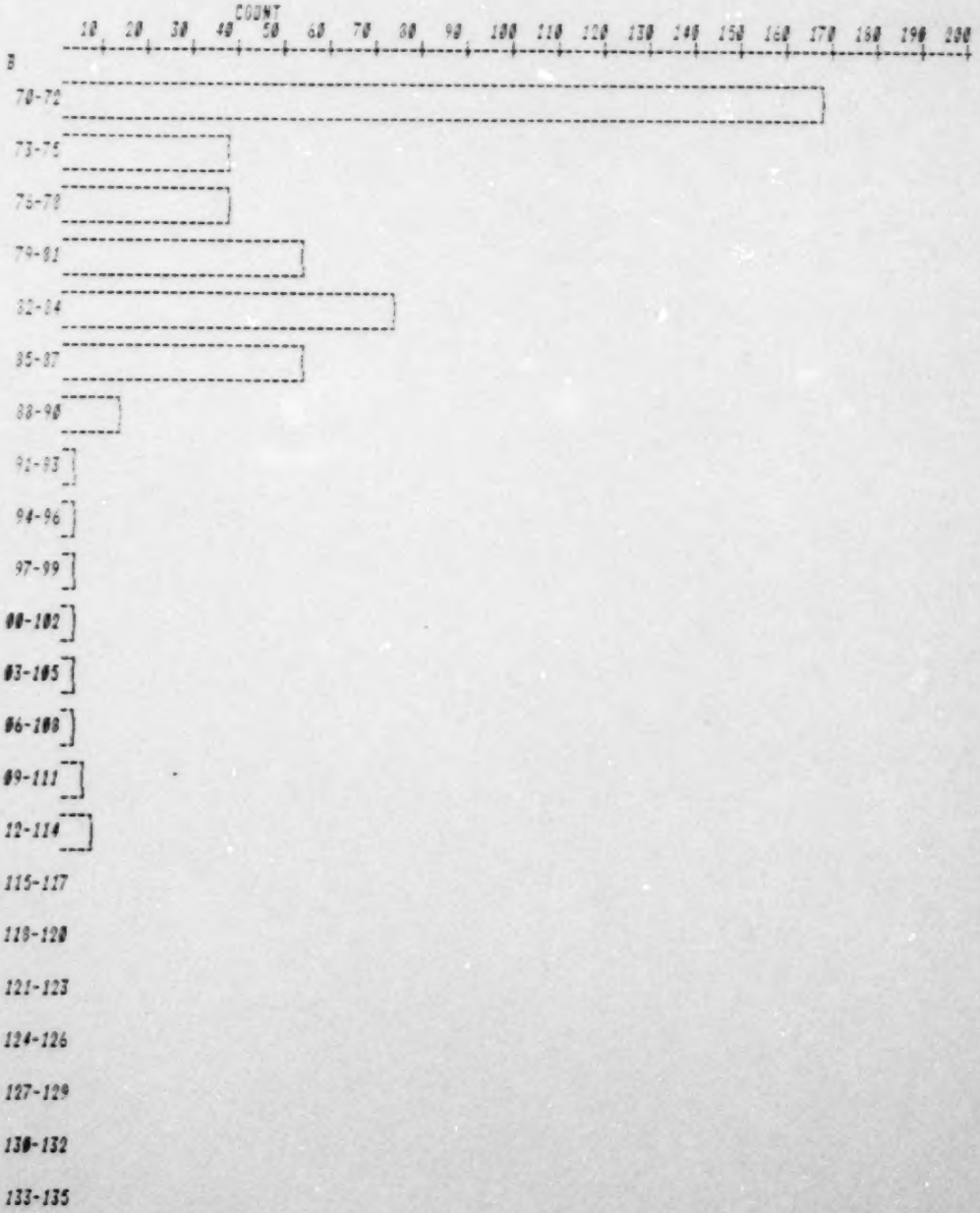
THQ FLOW CHART



FLOW CHART FOR RECALL

WELDER

USR CD	COMPS	LEQ	70-72	73-75	76-78	79-81	82-84	85-87	88-90	91-93	94-96	97-99	100-102	103-105	106-108	109-111	112-114	115-117	118-120	121-123	124-126	127-129	130-132	133-135
AABA	480	105	23	52	67	59	112	23	10	3	7	4	7	10	29	32	41	1	0	0	0	0	0	0
AABA	480	85	277	32	23	10	42	71	13	2	5	2	1	2	0	0	0	0	0	0	0	0	0	0
AABA	480	86	243	85	53	44	25	17	4	3	1	1	0	3	0	1	0	0	0	0	0	0	0	0
AABA	480	85	51	7	27	103	125	124	26	11	4	2	0	0	0	0	0	0	0	0	0	0	0	0
AABA	480	82	246	18	23	54	74	36	21	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AVRAGES	480	98	168	36	38	54	75	54	14	5	3	1	1	3	5	6	8	0	0	0	0	0	0	0
ST. DEV	0	9	120	30	20	33	43	44	8	3	2	1	3	4	12	14	18	0	0	0	0	0	0	0



LISTING OF APPLE PROGRAM "CATSCANER"

```
]LIST

10  HOME
100  REM  READ THE CATALOG
110 D$ =  CHR$ (4)
120  PRINT D$"BLOADCATSCAN"
130 Z$ = "":E$ = "EOF"
140 I = 0:FS = 0
145  IF Q$ = "Y" THEN 150
150  DIM F$(200)
160  CALL 768
170  PRINT D$"CATALOG,D2"
180  PRINT "EOF": CALL 771
190  INPUT Z$
200  IF Z$ = E$ GOTO 240
210 I = I + 1:F$(I) = Z$
220  IF I > 3 THEN FS = FS +  VAL ( MID$ (Z$,4,3))
230  GOTO 190
240  CALL 774
1000  REM  *** PURGE RTN ***
1010  FOR X = 1 TO I
1020 F$(X) = F$(X + 4)
1030 F$(X) =  MID$ (F$(X),8,16)
1040  NEXT
1050 I = I - 4
2000  REM  *** SELECT RTN ***
2005  IF Q$ <  > "Y" THEN  DIM C$(50)
2010  HOME : PRINT "ENTER JOB CATAGORY ";
2020  INPUT A$
2030  IF  LEN (A$) <  > 5 THEN  PRINT : PRINT "ENTRY NOT CORECT, PLEASE REENTER.": GOTO 2020
2040  FOR X = 1 TO I
2050  IF  LEFT$ (F$(X),5) <  > A$ THEN 2080
2060 C = C + 1
2070 C$(C) = F$(X)
2080  NEXT
3000  REM  *** OUT FILE NAME RTN ***
3001 D$ = "!9 Q$ = D$ + "APPEND " + A$ + ",D1": GOTO 3015
3010 Q$ = D$ + "OPEN " + A$ + ",D1"
3015  PRINT Q$
3020  PRINT D$;"WRITE ";A$
3040  FOR X = 1 TO C
3050  PRINT C$(X)
3060  NEXT
3070  PRINT "EOF"
3080  PRINT D$;"CLOSE ";A$
4000  HOME
4010  PRINT "IS THERE MORE ON ANOTHER DISK.  (Y OR N)";
4020  INPUT Q$: IF Q$ <  > "Y" THEN 4040
```

```
4030  IF Q$ = "Y" THEN  PRINT : PRINT "INSERT OTHER DISK IN DRIVE 2": PRINT "HIT RETURN TO CONTINUE."
4035  GET QQ$: IF QQ$ = "" THEN 4035
4037  GOTO 120
4040  PRINT D$;"APPEND ";A$;",D1"
4050  PRINT D$;"WRITE ";A$
4060  PRINT "EOF"
4070  PRINT D$;"CLOSE ";A$
4080  HOME : PRINT A$
4090  PRINT D$;"RUN THQ"

]PR#0
```

]LIST

LISTING OF APPLE PROGRAM "THQ"

```
5 D$ =  CHR$ (4)
10  DIM DT(530),G(33),L(70),Z(30),ZZ$(50)
16  FOR I = 1024 TO 1029:FL$ = FL$ +  CHR$ ( PEEK (I)): NEXT
17  HOME
19  PRINT FL$
20  PRINT "READING ";FL$
21  GOSUB 5000
22  PRINT D$;"DELETE MASTERFILE,D1"
23  PRINT D$;"OPEN MASTERFILE,D1"
24  PRINT D$;"CLOSE MASTERFILE"
30  FOR VV = 1 TO Z
40 FL$ = ZZ$(VV)
50  ONERR  GOTO 6000
120  PRINT D$;"OPEN "FL$",D2"
130  PRINT D$;"READ "FL$
140  FOR I = 0 TO 500
150  INPUT T: IF T < 0 THEN I = 500: GOTO 170
160 DT(I) = T
170  NEXT I: PRINT D$;"CLOSE "FL$
1000  HOME
1070 CP = DT(19) * 256 + DT(20)
1100 V1 = 10:R = 0:S1 = 0:X1 = 0:T1 = 0
1170  FOR K = 21 TO CP + 20
1180 X1 =  EXP ((DT(K) + DT(5)) / V1 / .43429448)
1190 S1 = S1 + X1
1200 R = R + 1
1210  NEXT K
1250 T1 = V1 * ( LOG (S1 / R) * .43429448)
1260 T1 =  INT (T1 * 10 + .5) / 10
1270  PRINT T1
1380  REM *** FREQUENCY  DISTRIBUTION (TIME HISTORY) ***
1385 LV = 3
1388  FOR I = 0 TO 32:G(I) = 0: NEXT I: FOR I = 0 TO 65:L(I) = 0: NEXT I
1390 A(2) = 32:A(3) = 33:A(4) = 32:A(5) = 35:MX =  - 1:MI = 999
1400 B(2) = 16:B(3) = 11:B(4) = 8:B(5) = 7:H = 0:B = DT(5):R = 0:DD = 5
1420  PRINT  SPC( 08)"RANGE     COUNT      PERCENT"; SPC( 07);
1430  PRINT "  RANGE      COUNT    PERCENT"
1435  PRINT  SPC( 08)"----------------------------"; SPC( 07);
1437  PRINT "----------------------------"
1440  FOR J = 21 TO 20 + CP
1450 L(DT(J)) = L(DT(J)) + 1
1460  IF DT(J) > MX THEN MX = DT(J)
1470  IF DT(J) < MI THEN MI = DT(J)
1480  NEXT J
1490  FOR J = 0 TO 63 STEP LV
1500  FOR I = J TO J + LV - 1
1510  IF I > 63 THEN 1530
1520 G(B) = G(B) + L(I)
```

```
1530  NEXT I
1540 R = R + 1
1550  NEXT J
1560 SUM = 0:H = 0:F = 0
1570  FOR J = 0 TO 63 STEP LV
1580  PRINT  SPC( 05)J + B"-"J + B + LV - 1"DB   ";
1590  PRINT G(H);: PRINT  SPC( 8 -  LEN ( STR$ (G(H))));
1600 Z =  INT ((G(H) / CP) * 10000 + .5) / 100
1610  PRINT Z;" %";:SUM = SUM + G(H): IF F = 9 THEN J = 63: GOTO 1690
1620  PRINT  SPC( 7 -  LEN ( STR$ (Z)));
1630 Q = J + B + A(LV) + LV - 1: IF Q > B + 63 THEN Q = B + 63:F = 9
1640 E =  LEN ( STR$ (J + B + A(LV))):EE =  LEN ( STR$ (Q)): PRINT  SPC( 10 - E - EE);
1650  PRINT J + B + A(LV)"-"Q"DB    ";G(H + B(LV));
1660 E3 =  LEN ( STR$ (G(H + B(LV)))): PRINT  SPC( 7 - E3);
1670  PRINT  INT ((G(H + B(LV)) / CP) * 10000 + .5) / 100" %"
1680 SUM = SUM + G(H + B(LV)):H = H + 1: IF LV <  > 5 THEN  IF Q >  = B + 63 THEN J = 63
1690  NEXT J
1700  PRINT : PRINT  SPC( 27)"MINIMUM LEVEL ="MI + B" DB"
1710  PRINT  SPC( 27)"MAXIMUM LEVEL ="MX + B" DB"
2000  REM  *** DISK STORAGE RTN ***
2010  PRINT D$;"APPEND MASTERFILE,D1"
2020  PRINT D$;"WRITE MASTERFILE"
2200 A$ =  LEFT$ (FL$,5)
2220  PRINT A$
2230  PRINT CP
2235  PRINT T1
2240  FOR I = 0 TO 21: PRINT G(I): NEXT I
2500  PRINT D$;"CLOSE MASTERFILE"
2600  NEXT VV
3000  PRINT D$;"RUN RECALL,D1"
5000  REM  FILE NAME GET RTN
5010  PRINT D$;"OPEN "FL$",D1"
5020  PRINT D$;"READ "FL$
5030  INPUT Z$
5035  PRINT Z$
5040  IF Z$ = "EOF" THEN 5200
5045 Z = Z + 1
5050 ZZ$(Z) = Z$
5060  GOTO 5030
5200  PRINT D$;"CLOSE "FL$
5210  RETURN
6000  IF  PEEK (222) <  > 6 THEN 6100
6010  FLASH
6020  PRINT "FILE NOT FOUND": NORMAL
6030  PRINT : PRINT "INSERT THE OTHER DATA DISK INTO DRIVE 2"
6040  PRINT "HIT 'RETURN' WHEN READY";
6050  GET A$: IF A$ = "" THEN 6040
6060  GOTO 120
6100  PRINT  PEEK (222): STOP
```

]LIST

LISTING OF APPLE PROGRAM "RECALL"

```
5 D$ =  CHR$ (4)
10  DIM A(24),B(24),C(60,24),D(24)
80  HOME
90  PRINT "INPUT JOB NAME ";: INPUT JN$
100  REM  *** SET UP AND TITLES ***
110 SP$ = "        ": FOR I = 1 TO 12:DA$ = DA$ +  CHR$ (157): NEXT
120 L$ =  LEFT$ (DA$,7) +  CHR$ (159)
130  FOR I = 1 TO 2:L$ = L$ +  LEFT$ (DA$,5) +  CHR$ (159): NEXT
135  FOR I = 1 TO 21:L$ = L$ +  LEFT$ (DA$,4) +  CHR$ (159): NEXT :L$ = L$ +  LEFT$ (DA$,4) +  CHR$ (156)
137 L$ =  CHR$ (27) + ">" + L$
140  PRINT D$;"PR#1"
150  PRINT  CHR$ (15): PRINT  CHR$ (27)"A" CHR$ (8)
160  PRINT  CHR$ (15)
165  PRINT JN$: PRINT
167  PRINT  CHR$ (27); CHR$ (49)
170 TT$ = "USER CD  COMPS LEQ   "
180 TT$ = TT$ + "70-  73-  76-  79-  82-  85-  88-  "
185 TX$ = TX$ + "72   75   78   81   84   87   90   "
190 TT$ = TT$ + "91-  94-  97-  109  103  106  109  "
195 TX$ = TX$ + "93   96   99   102  105  108  111  "
200 TT$ = TT$ + "112  115  118  121  124  127  130  133  "
205 TX$ = TX$ + "114  117  120  123  126  129  132  133  "
210  PRINT TT$
215  PRINT "                    ";TX$
220  PRINT L$
230 X$ =  CHR$ (9)
2000  REM  *** INPUT RTN ***
2005  ONERR  GOTO 2500
2010  PRINT D$;"OPEN MASTERFILE"
2015  PRINT D$;"READ MASTERFILE"
2020  INPUT A$
2025 X$ = A$ + "   "
2040  FOR I = 1 TO 24: INPUT A
2045 A(I) =  INT (A + .5):A =  INT (A + .5)
2050 X$ = X$ +  LEFT$ (SP$,(5 -  LEN ( STR$ (A)))) +  STR$ (A)
2060  NEXT
2080  PRINT X$:X$ = ""
2090  PRINT L$
2100 Y = Y + 1
2110  FOR J = 1 TO 24:B(J) = B(J) + A(J):C(Y,J) = A(J): NEXT
2120 X1 =  EXP (A(2) / 10 / .43429448)
2130 S1 = S1 + X1
2140  GOTO 2020
2500  PRINT D$;"CLOSE MASTERFILE"
2510  IF  PEEK (222) <  > 5 THEN  PRINT "ERROR CODE #"; PEEK (222): STOP
10000  FOR I = 1 TO 24:B(I) = B(I) / Y: NEXT
10010 X$ = "":X$ = "AVERAGES"
10012 X$ = X$ +  LEFT$ (SP$ (5 -  LEN ( STR$ / INT (B(I)))))) +  STR$ / INT (B(I)))
```

```
10013 T1 = (10 * ( LOG (S1 / Y) + .43429448))
10014 Q$ =  STR$ ( INT (T1 * 10 + .5) / 10)
10015 X$ = X$ +  LEFT$ (SP$,5 -  LEN (Q$)) + Q$
10020  FOR I = 3 TO 24
10030 X$ = X$ +  LEFT$ (SP$,(5 -  LEN ( STR$ ( INT (B(I))))) +  STR$ ( INT (B(I)))
10035 D(I) =  INT (B(I))
10040  NEXT
10050  PRINT X$
10060  PRINT L$
10100 X$ = "":X$ = "STD. DEV"
10130  FOR I = 1 TO 24
10132 PZ = 0
10135 P = 0: FOR O = 1 TO Y:P = P + (C(O,I) * C(O,I)):PZ = PZ + C(O,I): NEXT
10140 PZ = PZ * PZ:PZ = PZ / Y
10145 X1 =  INT ( SQR ((P - PZ) / (Y - 1)))
10150 X$ = X$ +  LEFT$ (SP$,5 -  LEN ( STR$ (X1))) +  STR$ (X1)
10160  NEXT
10170  PRINT X$: PRINT L$: PRINT
11020 H$ =  CHR$ (157):V$ =  CHR$ (159):SP$ = "          "
11030  REM  *** GRAPH RTN ***
11035  PRINT : PRINT : PRINT
11037  PRINT ,"             COUNT"
11040 L$ = "  ": FOR I = 1 TO 20:L$ = L$ +  STR$ (I) + "O" +  LEFT$ (SP$,4 -  LEN ( STR$ (I))): NEXT
11050  PRINT SP$;L$
11060 L$ = "": FOR I = 1 TO 20:L$ = L$ + H$ + H$ + H$ + H$ + V$: NEXT
11070  PRINT SP$;L$
11080  PRINT "  DB     "
12000  REM  ***BAR GRAPH ***
12010 Z1 = 70
12020  FOR J = 3 TO 24
12025  IF D(J) = 0 THEN 12200
12030 L$ = SP$: FOR I = 1 TO (D(J) / 2 - 1):L$ = L$ +  CHR$ (157): NEXT I:L$ = L$ +  CHR$ (149)
12040  PRINT L$
12050 Z$ =  STR$ (Z1) + "-" +  STR$ (Z1 + 2)
12060 Z1 = Z1 + 3
12070 SQ$ =  LEFT$ (SP$,09 - ( LEN (Z$))) + Z$
12080 L$ = SQ$: FOR I = 1 TO (D(J) / 2 - 1):L$ = L$ + " ": NEXT I:L$ = L$ +  CHR$ (156)
12090  PRINT L$
12100 L$ = SP$: FOR I = 1 TO (D(J) / 2 - 1):L$ = L$ +  CHR$ (157): NEXT I:L$ = L$ +  CHR$ (154)
12110  PRINT L$
12120 L$ = "": NEXT J
12125  NEW : END
12130  PRINT
12140  PRINT D$;"PR#0"
12200  REM  *** ZERO RTN ***
12210  PRINT SP$
12250 Z$ =  STR$ (Z1) + "-" +  STR$ (Z1 + 2)
12260 Z1 = Z1 + 3
12270 SQ$ =  LEFT$ (SP$,9 - ( LEN (Z$))) + Z$
12280  PRINT SQ$
12290  PRINT SP$
```

```
12300  GOTO 12120
20000  END

]
```

READY.

PROGRAM LISTING FOR COMMODORE "THH2"

```
10 DIM DT(501),G(33),L(70),Z(20)
20 PRINT:INPUT"INPUT FILE NAME, OR, HIT 'RETURN' FOR DIRECTORY   *---";FL$
21 IFFL$="*"THENCATALOG:GOTO20
22 PRINT"READING ";FL$
23 DOPEN#1,(FL$)
24 FOR I =  0 TO 480
25 INPUT#1,T:IFT<0THENI=480 :GOTO28
26 IF DS<>0 THEN PRINT""DS$:CLOSE1:STOP
27 DT(I)=T
28 NEXT I:CLOSE1
1070 CP=DT(19)*256 + DT(20)
1380 REM*** FREQUENCY  DISTRIBUTION (TIME HISTORY) ***
1385 LV=3
1388 FORI=0TO32:G(I)=0:NEXT:FORI=0TO65:L(I)=0:NEXT
1390 A(2)=32:A(3)=33:A(4)=32:A(5)=35:MX=-1:MIN=999
1400 B(2)=16:B(3)=11:B(4)=8:B(5)=7:H=0:B=DT(5):R=0:DD=5
1420 PRINTSPC(08)"RANGE      COUNT       PERCENT";SPC(07);
1430 PRINT"  RANGE       COUNT     PERCENT"
1435 PRINTSPC(08)"-----------------------------";SPC(07);
1437 PRINT"-----------------------------"
1440 FOR J=21 TO 20+CP
1450 L(DT(J))=L(DT(J))+1
1460 IF DT(J)>MX THEN MX=DT(J)
1470 IF DT(J)<MIN THEN MIN = DT(J)
1480 NEXT J
1490 FOR J= 0 TO 63 STEP LV
1500 FOR I= J TO J+LV-1
1510 IF I>63 THEN 1530
1520 G(R)=G(R)+L(I)
1530 NEXT I
1540 R=R+1
1550 NEXT J
1560 SUM=0:H=0:F=0
1570 FOR J=0 TO 63 STEP LV
1580 PRINTSPC(05)J+B"-"J+B+LV-1"DB    ";
1590 PRINT G(H);:PRINT SPC(8-LEN(STR$(G(H))));
1600 Z=INT((G(H)/CP)*10000+.5)/100
1610 PRINT Z;" %";:SUM=SUM+G(H):IF F=9 THEN J=63:GOTO 1690
1620 PRINT SPC(7-LEN(STR$(Z)));
1630 Q=J+B+A(LV)+LV-1:IF Q>B+63 THEN Q=B+63:F=9
1640 E=LEN(STR$(J+B+A(LV))):EE=LEN(STR$(Q)):PRINTSPC(10-E-EE);
1650 PRINTJ+B+A(LV)"-"Q"DB     ";G(H+B(LV));
1660 E3=LEN(STR$(G(H+B(LV)))):PRINTSPC(7-E3);
1670 PRINTINT((G(H+B(LV))/CP)*10000+.5)/100" %"
1680 SUM=SUM+G(H+B(LV)):H=H+1:IF LV<>5THEN IFQ>=B+63 THEN J=63
1690 NEXT J
1700 PRINT:PRINTSPC(27)"MINIMUM LEVEL ="MIN+B" DB"
1710 PRINTSPC(27)"MAXIMUM LEVEL ="MX+B" DB"
2000 REM *** DISK STORAGE RTN ***
2010 OPEN1,8,3,"MASTER1,SEQ,WRITE"
2020 OPEN2,8,3,"MASTERFILE,SEQ,READ"
2030 INPUT#2,A$
2035 IFA$="XXX"THEN2200
2040 INPUT#2,B$
2050 FORI=1TO15:INPUT#2,Z(I):NEXT
2100 PRINT#1,A$
2110 PRINT#1,B$
2120 FORI=1TO15:PRINT#1,Z(I):NEXT
2150 GOTO2030
2200 A$=MID$(FL$,7,5)
2210 B$=RIGHT$(FL$,5)
2220 PRINT#1,A$
```

```
2230 PRINT#1,B$
2240 FOR I=1TO22:PRINTG(I):NEXT
2250 PRINT#1,"XXX"
2500 CLOSE1
2510 CLOSE2
```

PROGRAM LISTING FOR COMMODORE "RECALL5"

```
10 DIMA(15),B(15),C(60,15),D(15)
100 REM *** SET UP AND TITLES ***
110 V$=CHR$(156):SP$="          ":FORI=1TO12:DA$=DA$+CHR$(157):NEXT
120 L$=LEFT$(DA$,8)+CHR$(159)
130 FORI=1TO14:L$=L$+LEFT$(DA$,7)+CHR$(159):NEXT:L$=L$+LEFT$(DA$,7)+CHR$(156)
140 OPEN4,4
150 PRINT#4,CHR$(15):PRINT#4,CHR$(27)"A"CHR$(8)
160 PRINT#4,CHR$(15)
170 TT$="USER CD "+CHR$(156)+" COMPS "+CHR$(156)+" LEQ    "
180 TT$=TT$+V$+"70-74  "+V$+"75-79  "+V$+"80-84  "+V$+"85-89  "+V$+"90-94  "+V$
190 TT$=TT$+"95-99  "+V$+"100-104"+V$+"105-109"+V$+"110-114"+V$+"115-119"+V$
200 TT$=TT$+"120-124"+V$+"125-129"+V$+"130-133"+V$
210 PRINT#4,TT$
220 PRINT#4,L$
230 X$=CHR$(9)
2000 REM *** INPUT RTN ***
2010 DOPEN#1,"MASTERFILE"
2020 INPUT#1,A$:IFA$="XXX"THEN10000
2025 X$=A$+"    "
2030 INPUT#1,A$
2040 FORI=1TO15:INPUT#1,A
2045 A(I)=A
2050 X$=X$+CHR$(156)+LEFT$(SP$,(7-LEN(STR$(A))))+STR$(A)
2060 NEXT
2070 INPUT#1,A
2080 PRINT#4,X$CHR$(156):X$=""
2090 PRINT#4,L$
2100 Y=Y+1
2110 FORJ=1TO15:B(J)=B(J)+A(J):C(Y,J)=A(J):NEXT
2120 X1=EXP(A(2)/10 /.43429448)
2130 S1=S1+X1
2500 GOTO2020
10000 FORI=3TO15:B(I)=B(I)/Y:NEXT
10010 X$="":X$="AVERAGES"+CHR$(156)+"    "+STR$(INT(B(1)/Y))+CHR$(156)
10013 T1=(10*(LOG(S1/Y)*.43429448))
10014 Q$=STR$(INT(T1*100+.5)/100)
10015 X$=X$+LEFT$(SP$,7-LEN(Q$))+Q$
10020 FORI=3TO15
10030 X$=X$+CHR$(156)+LEFT$(SP$,(7-LEN(STR$(INT(B(I))))))+STR$(INT(B(I)))
10035 D(I)=INT(B(I))
10040 NEXT
10050 PRINT#4,X$CHR$(156)
10060 PRINT#4,L$
10100 X$="":X$="STD. DEV"+CHR$(156)
10101 FORI=1TO2
10102 P=0:FORO=1TOY:P=P+(C(O,I)*C(O,I)):NEXT
10110 X1=INT(SQR((((P)-((B(I)*B(I))/Y))/(Y-1))))
10120 X$=X$+LEFT$(SP$,7-LEN(STR$(X1)))+STR$(X1)+CHR$(156)
10125 NEXTI
10130 FORI=3TO15
10135 P=0:FORO=1TOY:P=P+(C(O,I)*C(O,I)):NEXT
10140 X1=INT(SQR((((P)-(((B(I)*Y)*(B(I)*Y))/Y))/(Y-1))))
10150 X$=X$+LEFT$(SP$,7-LEN(STR$(X1)))+STR$(X1)+CHR$(156)
10160 NEXT
10170 PRINT#4,X$:PRINT#4,L$:PRINT#4
10180 DCLOSE#1
11020 H$=CHR$(157):V$=CHR$(159):SP$="          "+CHR$(156)
11030 REM *** GRAPH RTN ***
11035 PRINT#4:PRINT#4:PRINT#4
11037 PRINT#4,"              COUNT"
11040 L$="  ":FORI=1TO20:L$=L$+STR$(I)+"0"+LEFT$(SP$,4-LEN(STR$(I))):NEXT
11050 PRINT#4,SP$;L$
11060 L$="":FORI=1TO20:L$=L$+H$+H$+H$+H$+V$:NEXT
```

```
11080 PRINT#4,"  DD      "+CHR$(156)
12000 REM ***BAR GRAPH ***
12010 Z1=70
12020 FORJ=3TO15
12025 IFD(J)=0THEN12200
12030 L$=SP$:FORI=1TO(D(J)/2-1):L$=L$+CHR$(157):NEXT:L$=L$+CHR$(149)
12040 PRINT#4,L$
12050 Z$=STR$(Z1)+"-"+STR$(Z1+4)+CHR$(156)
12060 Z1=Z1+5
12070 S0$=LEFT$(SP$,10-(LEN(Z$)))+Z$
12080 L$=S0$:FORI=1TO(D(J)/2-1):L$=L$+" ":NEXT:L$=L$+CHR$(156)
12090 PRINT#4,L$
12100 L$=SP$:FORI=1TO(D(J)/2-1):L$=L$+CHR$(157):NEXT:L$=L$+CHR$(154)
12110 PRINT#4,L$
12120 NEXTJ:L$=""
12130 PRINT#4
12140 CLOSE4:END
12200 REM *** ZERO RTN ***
12210 PRINT#4,SP$
12250 Z$=STR$(Z1)+"-"+STR$(Z1+4)+CHR$(156)
12260 Z1=Z1+5
12270 S0$=LEFT$(SP$,10-(LEN(Z$)))+Z$
12280 PRINT#4,S0$
12290 PRINT#4,SP$
12300 GOTO12120
20000 END
```